Names: _____

Date: _____   Block:_____

Rollerball Lab (Science 10: Energy)

Instructions:

1. Set up the apparatus at the desired height. With your teacher's help, create a video of the ball rolling down the rollercoaster, multiple times.
2. With your teacher's help, use the Tracker analysis software to determine the velocity of the ball at different points on the rollercoaster. Use a meter stick to measure the height of the ball above the floor at those same points.

A

C

B

D
(while still moving)
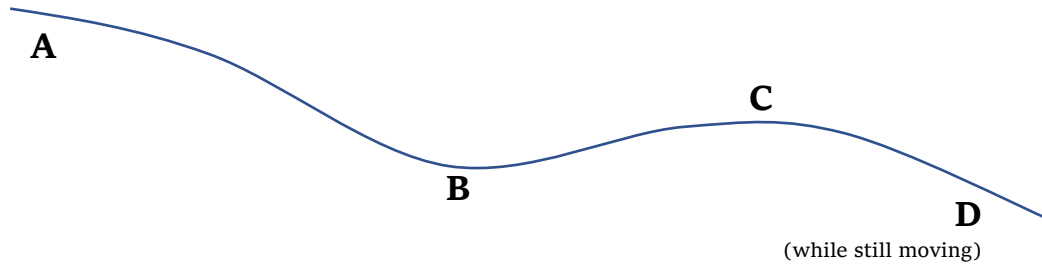
Observations

	Height (m)	Velocity (m/s)
A		
B		
C		
D		

Calculations

Use the data to calculate the mechanical kinetic energy and the gravitational potential energy and the total of these two energies, at each point. Show your work; express answers with appropriate units.

	E_k (J)	E_g (J)	Total Energy (J)
A			
B			

	E_k (J)	E_g (J)	Total Energy (J)
C			
D			

Discussion Questions

1. What is the law of conservation of energy? (hint: textbook page 206)

2. Based on your calculations, was energy conserved in your experiment? Explain.

3. What types of energy were "wasted" in your experiment? List them.

4. What possible sources of error could have affected your results and the accuracy of your experiment? Explain.

5. EXT: Suppose the ball did not stop at position "D", but instead fell to the floor. Predict its speed as it hits the floor. Show your work. (Answer on a separate sheet of paper).